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Soviet Efforts in New Ship Technology
(Propulsion and Hull Forms)

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There is considerable evidence that the Soviets have an energetic research and development program directed towards the achievement of high speeds for ocean-going marine vehicles. This program was underway in the Ministry of Shipbuilding and fairly well organized by 1964. It is also clear that some of the research effort of the Soviets' foremost aeronautical research center (TsAGI) has been allocated to it for the purpose of solving the aero-hydrodynamic problems involved.

The Soviet approach is quite similar to that of the West, namely, a continuation of hydrofoil and air cushion vehicle development coupled with an attempt to introduce new forms using the ram-wing and wing-in-ground-effect concepts. The output of theoretical papers in these fields is impressive in quantity, but somewhat less so in quality.

Authoritative Soviet naval officers have demonstrated an awareness of the naval missions that advanced vehicles of the hydrofoil, air cushion and ram-wing type could carry out. Also,

the leading Soviet naval seaplane designer advocated as early as 1963 the construction of very large, 1,000 ton seaplane(S) to fill the "speed gap" in marine transportation.

Soviet practical achievements in advanced marine vehicles are as follows. Hydrofoil craft adequate for river service first appeared in 1957, and by 1965 nine civil types having gross weights up to 120 tons and one naval coastal patrol type of about 50 tons had reached operational status. Two different prototypes of air cushion vehicles appeared in 1962 and have been followed by two further models, one of which appears to have the interest of the Soviet Navy. These do not appear to be equal to Western types in performance, however.

In the summer of 1967, a most unusual vehicle, 300 feet in length and having a large, low-aspect area wing and also a large aerodynamic empennage, was seen in the Caspian Sea, apparently being readied for underway trials. This vehicle could be an advanced marine craft of either the ram-wing, wing-in-ground-effect or low flying seaplane type. Analysis of this vehicle is not yet complete, but it could well be a product of this Soviet R&D program. If so, it represents an attempt to achieve an operational capability in very large and very high speed marine vehicles considerably earlier than the West.

In sum, we estimate that, sometime during 1970-80, the USSR will probably develop merchant and naval vessels capable of speeds of 100 knots or more. These would of course be of the non-displacement types referred to above. Assuming that present

difficulties, which appear to lie in the field of stability, control, and powering of such vehicles, are overcome, we would expect a few to be available by 1975.